NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

TOP SECRET/SENSITIVE - XGDS January 17, 1977

MEMORANDUM FOR:

The Deputy Secretary of State
The Deputy Secretary of Defense
The Director of Central Intelligence
The Director, Arms Control and Disarmament Agency
The Director, Office of Management and Budget
The Chairman, Joint Chiefs of Staff

SUBJECT: Paper on "The Triad and the Future of the ICBM Force"

Attached is DOD's proposed final version of a paper entitled "The Triad and the Future of the ICBM Force", which takes into account comments made by the NSC Defense Review Panel Working Group during review of an earlier version.

The Chairman of the NSC Defense Review Panel has asked that this revised paper be forwarded to DRP principals for their clearance prior to his forwarding it to Congress. Since the paper would have to be signed out not later than Wednesday, January 19, it is requested that DRP principals indicate their clearance directly to the DRP Chairman by COB Tuesday, January 18 (with copies to the Assistant to the President for National Security Affairs).

Jeanne W. Davis
Staff Secretary

TOP SECRET/SENSITIVE - XGDS (B) (3)
Classified by Brent Scowcroft

TS 770013
~~CIA #1~~
#2 Series B

WORKING PAPERS

The Triad and

The Future of the ICBM Force

14 January 1977

WORKING PAPERS

CONTENTS

I. Deterrence and US Policy

The basic national security objective is to preserve the United States as a free nation with its fundamental institutions and values intact. This involves assuring the physical security of the United States and maintaining an international environment in which US interests and national well-being are protected. Achieving this objective is dependent upon the US ability to deter war, to prevent coercion, to influence international affairs from a postion of recognized strength, to fight in defense of our interests when necessary and to terminate conflicts on terms compatible with US national security interests.

Accordingly, strategic nuclear forces should be sized and structured to achieve high confidence deterrence and, should deterrence fail, be capable of being employed with flexibility and effectiveness. To attain these goals, strategic nuclear forces must provide:

- An assured retaliatory capability at all times and under all circumstances.

- A clear capability to conduct nuclear operations across a full range of conflict intensities in a manner closely responsive to political and military circumstances.

- A visible capability and commitment to counter Soviet force improvement initiatives that could alter the military balance. This capability and commitment should provide inducement to the Soviet Union to abide by current arms control agreements, to negotiate equitable follow-on agreements and, in particular, nuclear force reductions.

In brief, the role of US strategic nuclear forces is enhancement of worldwide stability. This requires that the forces be postured so that there is strong deterrence with no incentive or provocation for a nuclear first strike and a capability to control escalation.

In supporting deterrence and escalation control objectives, the US force posture should promote stability by removing incentives to use nuclear weapons, particularly in a crisis situation, and by reducing pressures for unproductive or counterproductive arms competition. In particular, the US strategic force posture should deny an opponent the opportunity to achieve a significant relative military advantage from a preemptive or first-strike nuclear attack. An ability to destroy an attacker's withheld and reserve force, as well as potentially reloadable launchers, as part of a retaliatory strike, may be necessary to counter post-attack military capability to coerce or blackmail the United States. This posture should not appear to threaten a disarming first strike.

The concern is frequently expressed that US achievement of highly accurate reentry vehicles is destabilizing, in that such a capability constitutes a first-strike threat. More generally, stability is said

II. Deterrent Force Requirements and Missions

Based on the fundamental strategic policy promulgated by the President and amplifying guidance by the Secretary of Defense, the Joint Chiefs of Staff identify the missions and recommend the proper mix of systems to provide assurance that national objectives can be met under all conditions.

Potential aggressors must be convinced of our will to retaliate appropriately and of our capability to inflict unacceptable damage regardless of the conditions under which they might initiate aggression. Such assurance is also necessary to ourselves to preserve our freedom of action.

To provide this assurance our in-place forces, first of all, must have adequate survivability in any conceivable attack which might be made to eliminate them. The surviving forces must be appropriate in numbers and characteristics for their missions, responsive to command and control, able to penetrate defenses intended to blunt their effectiveness and capable of successfully engaging the targets they are launched against.

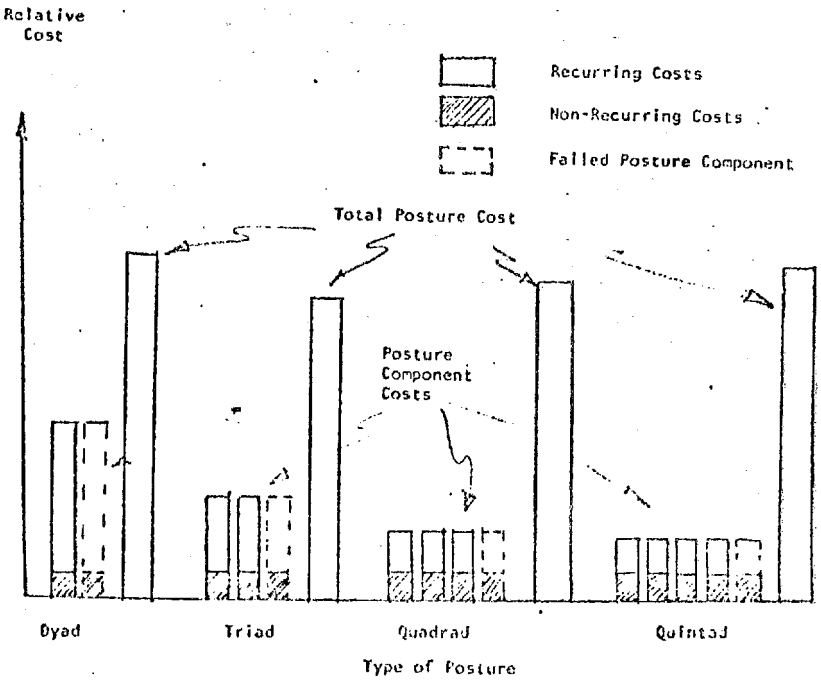
Diversity and Multiple Coverage

In addition to these straightforward considerations, insurance against unforeseen vulnerabilities can be provided by utilizing a diversity of forces for the primary deterrent, by maintaining a survivable reserve force and by the capability to reconstitute and control surviving elements of our nuclear forces. Because Soviet strategic force improvement will provide them with increased counterforce as well as countervalue capabilities, preserving a stable deterrent is and will remain a dynamic process.

The objective of diversity is to distribute the deterrent capability through different forces having a variety of survival modes, defense penetration techniques, and attack characteristics, so that no single breakthrough by an opponent, or any widespread failure or weakness in a system would so reduce their combined effectiveness that their deterrent effect would be lost. Thus, the US has built a Triad of strategic forces with complementary and overlapping capabilities and noncommon vulnerabilities as indicated in Table I.

consists of multiple forces adequate to cover all recovery resource targets with one force failed. Because the total recurring costs of the non-failed forces are approximately equal for each posture, as noted above, a triad of forces is the least expensive way to meet this criterion.

Figure 1. Relative Costs of Redundancy



Triad Targeting

Current US strategic nuclear employment plans reflect both our deterrence policy and the redundancy/diversity of the Triad. The first mission priority in allocation of forces is the destruction of an enemy's resources critical to postwar recovery. Next in allocation is the capability to destroy his political and military leadership. Finally, to the extent practicable the remaining deployed forces are allocated to neutralize residual enemy forces in order to limit damage to the US. The overall goal is to assure that an enemy cannot achieve a significant advantage from a first strike against the US.

Today, approximately 37% of all alert weapons allocated to USSR targets are assigned to recovery resources, with the three elements of the Triad targeted so that each causes approximately equal value target damage. This provides high assurance that the attack objective can be accomplished under all conditions of war initiation regardless of possible degradation of our force. The equal value damage for the economic part of this task is achieved with a different allocation of effort to each element of the Triad, reflecting their different capabilities.

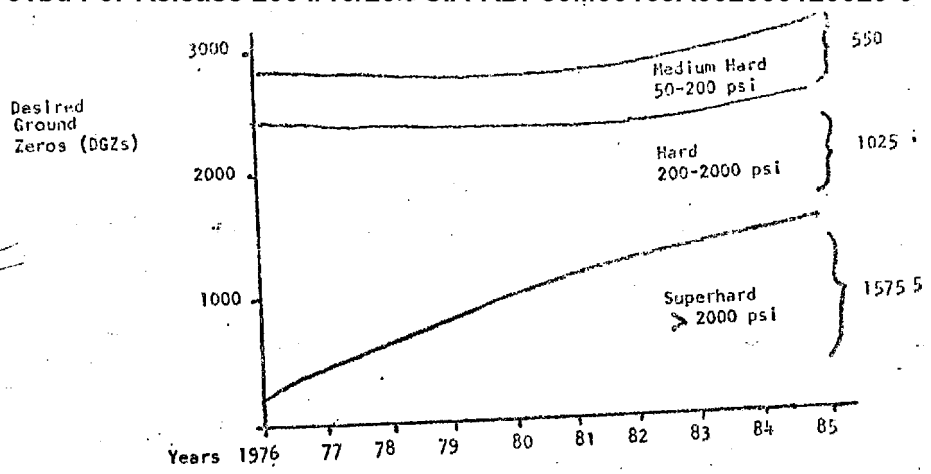


Figure 2. Trend in USSR Target Hardness

The size of the overall target structure changes with time, as shown in Figure 3. The reasons for this include physical changes in the target structure, criteria for inclusion of installations in the target data base, methodology of DGZ construction and the average yield of allocated weapons.

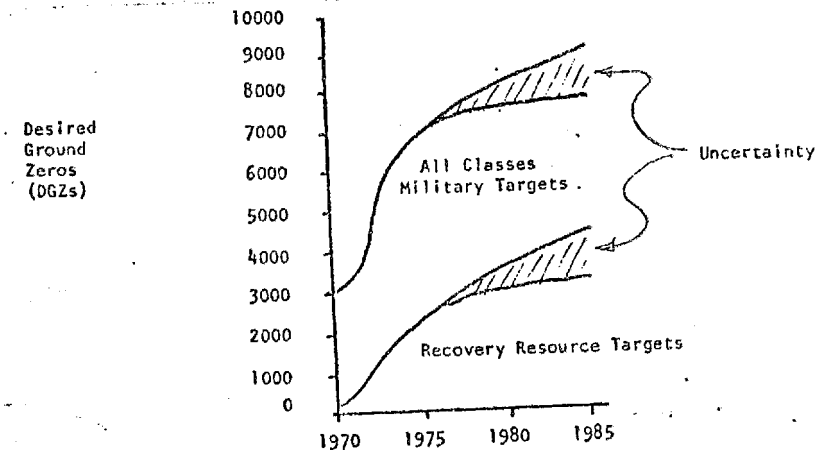


Figure 3. Estimated Growth in Number of Targets

Forecasts beyond 1976 are based on known activity and reasonable projections. The areas of uncertainty reflect factors such as possible increased hardness and dispersal of USSR recovery resources, changes in the US warheads used, and changes in targeting philosophy. If the Soviet Union hardens and disperses their industry further, an increase in the number of DGZs obviously would result. If lower yield warheads are used against industrial facilities, fewer installations can be covered in general by each warhead and additional DGZs must be designated. Future targeting philosophy may increase levels of effort devoted to specific areas critical for controlling escalation and for assuring destruction of USSR postwar recovery capability. For example, specific targeting of Warsaw Pact recovery resources may be required to deny their use to the USSR; this objective is not targeted today. Changes such as these, together or separately, would place greater qualitative and quantitative demands on the Triad. An estimate of how the target set may be structured in the mid to late 1980s, based on the foregoing, is shown in Table 3. The number of nonnuclear soft targets in this table does not reflect any possible additional industrial dispersal hardening.

TABLE 3

PLANNED PEACETIME TARGET CLASS ESTIMATES (FY)

Target Class	Number of Installations	Total Number of DGZ's
Time-Urgent, Hard { Silo	1,500	1,500
Time-Urgent, Hard { Non-Silo	1,500	1,000
Time-Urgent, Soft	2,500	500
Non-Time-Urgent, Hard	1,000	1,000
Non-Time-Urgent, Soft	18,000	3,500
	24,500	7,500

III. Ability of the Programmed Forces to Execute Assigned Mission.

Triad Survivability

The requirement for modernization of the elements of the Triad is driven not only by the target complex growth in numbers and hardness but also by the current and projected increase in Soviet offense and defense capabilities. Thus, the primary reason for the B-1 bomber is to increase survivability against attack both on its bases and during penetration. The Trident SLBM program is being developed with longer-range missiles and a quieter submarine to avoid system vulnerability to enemy action. The Trident submarine will also be built with the capacity for incorporation of improved ship and missile subsystems which may become necessary to enhance survivability or effectiveness in the future. In addition, development of the Trident II will provide multiple coverage of all classes of targets.

The primary rationale for M-X is also to improve stability against a growing threat. The current estimated throw-weight total of Soviet ICBMs is just over seven million pounds. By 1986, we estimate the total will increase to over 11 million pounds. The effect of this increase in throw-weight in terms of total deliverable reentry vehicles is from an estimated 2,100 RVs in 1976 to over 6,500 in 1986, assuming a SAL constrained force of 2,400 Strategic Nuclear Delivery Vehicles and 1,320 launch vehicles with MIRVs. It also permits a Soviet increase in total nuclear yield (with fewer SNDVs) even though the propulsion and dispersing mechanisms of a MIRV'd missile account for roughly 40% of the throw-weight. The increase in number of RVs combined with the accuracy improvements estimated for this time period will produce a much more serious threat than today's.

While the current ICBM force has adequate survivability against any Soviet attack which could be made today, by the early 1980s, the number of missiles expected to survive in silos may be smaller than the number required to perform the assigned mission. (Figure 4).

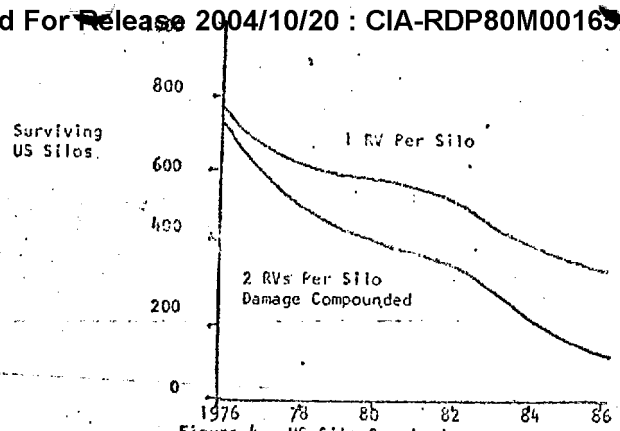


Figure 4. US Silo Survival
1976 NIE Best Estimate

A substantial operational advantage is gained through increased throw-weight because of the flexibility in design and force planning it allows. As accuracy improves and as component miniaturization increases, smaller RVs are adequate and throw-weight becomes available to increase the number of RVs per launcher. This will permit the Soviet planner a wider variety of attack options, an increased reserve arsenal, and a larger threat from each missile deployed.

The impact of the threat on our Minuteman and Titan ICBMs has been moderate in the past because of the modifications which have been made to ICBM system hardware. These have increased command and control speed and redundancy, increased the resistance of the silo structures and their contents to weapon effects, including EMP and shock, and hardened the missile components to in-flight nuclear effects. The current trends in Soviet force components, however, indicate that improvements like these will not be sufficient in the future. The hardness of the Minuteman silos varies with individual geological differences, but when the currently programmed force upgrade work is completed there will be 850 silos with hardness between approximately 1400 psi and 2200 psi and 150 at approximately 600 psi.

ABM protection of US silos (and all other assets) sufficient to significantly improve the overall exchange ratio is prohibited by the ABM Treaty, though some system R&D is continuing as a hedge against possible abrogation.

Soviet Civil Defense

Civil Defense activities such as are reported in the Soviet Union have potential for decreasing the effectiveness of a given retaliatory strike but, at present, information on the Soviet programs is inadequate to allow a quantitative assessment of their effect.

The recent Interagency Intelligence Memorandum on Soviet Civil Defense concludes that the Soviet program is more extensive and better developed than it appeared to be when the intelligence community last examined Soviet civil defense, in 1971. Soviet civil defense is evidently being pursued in accordance with the following order of priority:

(1) assuring continuity of government by protecting the political and military leadership;

(2) providing for continuity of important economic operations by hardening facilities, protecting essential personnel, and other measures; and

(3) protecting non-essential personnel through sheltering or evacuation.

Ths Soviet program for the protection of population includes the following elements: a national warning system, plans for crisis evacuation of cities, blast and fallout shelters to protect government and military leaders, party cadre and essential workers, and fallout shelters for some unknown portion of the general public. There are also programs for industrial dispersal and hardening, and other measures more directly related to post-attack recovery. While it is known that the Soviets are taking some actions with respect to all of these elements, data are currently lacking on the progress they are making in their preparation.

The potential impact of these economy-protecting programs can be significant on the number of weapons required. Dispersing new facilities so that each requires a separate DGZ is an important element. Low-cost modifications of design, construction methods, and operating procedures may have only a small effect on apparent facility hardness but a major effect on the time it would take to restore the facility to some level of useful output. Such measures would increase the importance of higher accuracy as well as increasing the value of a higher yield and greater numbers of weapons.

Soviet ABM

One constraint on ballistic missile mission accomplishment would be an effective Soviet ABM, although the problem will be small if there is continued compliance with the deployment provisions of the ABM treaty. Of more concern is the on-going development of a rapidly deployable ABM system. This, when in operation, could alter significantly the US missile resources required in order to have high confidence in the ability to achieve the desired effect on Soviet recovery and other resources. Soviet defense R&D efforts appear to be in this direction, and a system currently under test appears well-suited for rapid deployment (estimated single-site deployment in six months vice five years for one Moscow ABM site). Additionally, two new large radars which may have battle management capability are nearing operational status. Nationwide deployment of an effective ABM would probably require years to complete but limited defense to protect only critical assets could be rapidly deployed. If this occurred but had not been allowed for in weapon procurement and strike planning, deterrence would be weakened. Some counter to an ABM is available with advanced penetration aids and defense saturation or exhaustion tactics.

US Targeting Policy

A possible change in targeting that would affect the required composition and characteristics of the US ICBM force could be an increase in level of attack on Soviet hard targets. The proper level of capability and targeting for this mission is an issue now being analyzed and discussed. It is commonly agreed that the US should not try to maintain a level of counter-force capability that would appear to threaten the Soviet retaliatory capability. Some counter-silo capability is required, however, as part of a retaliatory strike, to draw down any withheld forces and to attack potentially reloadable launch facilities. The Soviet withheld forces would be the residual not required for a counter-military first strike and the planned strategic reserve.

The obvious effect of this dual constraint -- having a significant capability after attack without having full capability before -- is that the survivability of each missile must be high. High survivability is necessary in that a smaller initial deployment would then be adequate for this mission. A lower survivability-per-missile would mean that the peacetime deployment would have to be so large that it might appear to threaten attack on all Soviet silos. Force modernization to insure some moderate level of ICBM post-strike counter-force capability through increased unit survivability rather than through larger initial deployment should have no adverse effect on crisis stability. Trident II may add to this capability in the late 1980s.

IV. Current ICBM Programs and Alternatives.

The 54 Titan missiles carry 20% of the throw-weight and 38% of the megatonnage of the US ICBM force, are deployed in 300 psi silos and are programmed in the force through the period of the Five-Year Defense Plan.

The 444 Minuteman II missiles, which deliver a single 1.1 MT weapons with a 2300 foot CEP, are an important component of our strategic forces, particularly for some limited-response options. The missile, however, compared to Minuteman III, is more susceptible to dust erosion in powered flight, is less accurate, and has no remote targeting system. A modernization program for the Minuteman II missile is planned as an adjunct to the M-X program. This will use Minuteman III components which are available as MM III is replaced one-for-one by M-X. Further, the development and deployment of the low oralloy warhead, which is planned for this missile, will release up to 60,000 kg oralloy for other systems. This represents approximately 1/6 of the entire stockpile and about 1/2 of that available for ICBMs.

Minuteman Improvement Programs

The Minuteman III system inventory includes 550 missiles in silos, plus approximately 100 in storage and a production run of 60 which will be completed in October 1978. The missiles, beyond the number of silos, are for spares, for operation test (7/year) and for possible future deployment. The four system improvement programs described below will

maintain force flexibility and weapon effectiveness against all classes of targets, but will not be sufficient against the projected threat of the 1980s. By the early 1980s, the Soviet Union is expected to be able to target at least two MIRVs on each U.S. silo. These MIRVs are expected to have an accuracy/yield combination that would provide a high probability of launch facility destruction. As the number of Minuteman which would be expected to survive attack gets smaller, the deterrent effect of the land-based force and advantages of a Triad will be degraded. The survivability improvement modernizations only postpone the time when alternate basing modes for ICBMs must be considered. A mobile basing for part of the Minuteman force has been studied but the cost of the system per missile was not appreciably less than for M-X, while the cost per surviving MIRV was more.

Upgraded Silos

Resistance to nuclear effects is being increased by improved shock isolation of the missile and support equipment, by shielding and filtering against electromagnetic pulse, and by radiation and debris management. Hardness of the system is increased by two to six times through these improvements. The full program will be completed at all MM III silos and at 300 MM II silos in September 1979.

Command Data Buffer (CDB)/Improved Launch Control System (ILCS)

The Command Data Buffer, applied to MM III, provides rapid remote retargeting, improved command and status message handling and improved security. Targeting information is prepared and inserted remotely at the Launch Control Center. Without CDB, targeting information could be prepared only at SAC HQ and would have to be transmitted manually to each missile launcher for insertion. The Improved Launch Control System provides all CDB features to Minuteman II except that of remote retargeting. Both modifications are performed concurrent with the upgrade silo program. This system improves force flexibility, of course, but is also important in the planning for force reconstitution and reprogramming after an attack. Further improvements in this capability may be required in the future to allow entire force retargeting in real or near-real time.

Guidance Improvement

Performance of Minuteman III guidance will be modernized by changes in the airborne computer software routines. This involves better mathematical modeling of the inflight performance of the inertial platform and accelerometers and the earth's gravity, as well as improved calibration routines for the gyroscopes and accelerometers prior to launch. Minuteman III accuracy will be improved from approximately 1000 feet to between 600 and 750 feet. Development and test is in progress for deployment in July 1978.

MK 12A Reentry Vehicle

Although this vehicle will have the same profile as the existing Minuteman III MK 12 reentry vehicle, it will contain a warhead of twice the yield (335 KT vice 170 KT). Initial operational capability is planned for February 1980. Three hundred Minuteman III missiles will be equipped with the MK 12A by 1983. This larger yield weapon will allow coverage of more soft targets per weapon DGZ as well as higher effectiveness against hard targets.

The Improved ICBM (M-X) Program

The M-X program is keyed to provide the number and type of surviving missile warheads believed necessary in the mid-1980s and beyond.

The M-X missile, the design of which is compatible with the maximum size for a "light" ICBM tentatively agreed to in the SALT negotiations at approximately 195,000 pounds with about 7500 pounds throw-weight, is capable of mobile deployment and can be launched from a modified Minuteman silo. The numbers and yields of the MIRV warheads will be determined by requirement studies and they will have an accuracy not achievable with current systems. One configuration which has been studied in depth has ten MIRVs of 350 KT yield and 300 to 400 foot accuracy. Although silo deployment using cold-launch techniques is possible, it is important that the initial deployment be in a mode with improved survivability. Since any attack on a mixed silo-based force would allocate attack resources among targets in accordance with their relative value, the expected number of surviving M-X missiles, if silo-based, would be small, so that this deployment mode for the Initial Operational Capability would not provide the force characteristics necessary. An early (1983) IOC for mobile-based M-X is feasible and is desirable to indicate commitment, to provide additional ICBM capability at that time, and to allow full system deployment in the mid-1980s.

Candidate reentry vehicles for M-X are being evaluated in the Advanced Ballistic Reentry System (ABRES) program. At present there are no plans to equip M-X with a maneuvering reentry vehicle (MaRV) although ABRES continues to develop that technology. In the event that the Soviets deploy an extensive ABM system, the technology could be converted to an operational system compatible with M-X.

The development plan for M-X describes two major tasks: one is to produce the missile and its related support equipment and the other is to select, design, and construct the best basing mode, considering all of the relevant technical, economic and political issues.

Alternate Deployment Concepts

Numerous concepts for alternate ICBM basing have been studied to determine an effective basing mode that does not degrade their unique capabilities. In initial concept screening, most were eliminated because of questionable survivability, high cost, or excessive technical risk.

A number of different operational concepts have been extensively studied. The conclusions have generally been that while some concepts can provide high survivability for a large fraction of the force, the problems of accuracy and system cost eliminate them from further consideration. For example, air mobile ICBMs are feasible but lack enduring system survival after attack. It may be desirable to hold back part of the ICBM force for escalation control or failing that, for long-term harassment of recovery activities, and an airborne system is not appropriate for that role.

Two land-mobile concepts, shelter and trench, have survived the initial screening. The shelter concept has a number of hardened shelters for each M-X missile. The missile in a canister on its transporter/launcher is moved at random intervals from shelter to shelter. During attack, the shelters provide protection against blast and radiation; the transporter/launcher and missile canister provide protection against electro-magnetic pulse and ground shock. Prior to launch, the shelter door is opened against the debris from any nearby nuclear burst and the transporter/launcher guides itself out of the shelter, sets stabilizing jacks, erects the canister and launches the missile. Mobility between shelters is achieved through the use of manned vehicles which move the transporter/launcher at intervals to maintain deception. Survivability is controlled by the missile-to-shelter ratio.

The trench concept has a number of covered trenches, each containing one or more missiles. Hardness to weapon effects is achieved by laying a concrete tube in the trench and covering the tube. The missile moves in the tube on its transporter/launcher. Movement of the transporter/launcher is automatic and random. Only for maintenance is the missile removed from the trench. For launch, the transporter/launcher erects the missile canister by breaking through the concrete tube and the approximately five feet of soil overburden. This is achieved by designing the concrete tube to break outward easily but to withstand inward forces due to overpressure.

Command control for these concepts is conceived to be similar to but not exactly the same as, Minuteman. Hardened redundant communications, using the latest technology, will link the control centers to the missiles. Airborne launch control centers will be capable of duplicating all activities of the ground control system. Advanced computer technology provides the capability to store a complete target system data base within the weapon system, making it quickly reactive to trans/post-attack response decisions. Once a valid launch command is recognized by the appropriate missile computers, the launch sequence will be automatic.

These multiple aimpoint (MAP) concepts would force the enemy to plan an attack on all of the hardened shelters and miles of trench in order to have high confidence that he could prevent a heavy retaliatory strike.

Selection of the number of aimpoints per missile to design into the system is a function of the exchange ratio believed necessary, plus other variables. A two to one throw weight exchange ratio, unfavorable

to the USSR, for example, can be gained by deploying seven miles of trench or eleven shelters per missile. The exchange ratio or survivability against a given threat can be increased further by expansion of the basing facilities -- more trench or shelters. This is more attractive than proliferation of launchers and associated missiles which may be limited by a SALT agreement.

The M-X system as programmed will increase ICBM survivability, and retain or improve on the unique characteristics of ICBMs: high confidence command control communications (C^3); the combination of early, controllable, time-on-target and high accuracy; high alert rate and low operating costs. ICBM C^3 characteristics are positive, survivable, secure, rapid and accurate communications, both with outside sources and internal to the weapon system. This allows two-way status reporting and rapid, remote retargeting to any point within missile range.

The Improved SLBM (TRIDENT II)

While our current and programmed ICBM force will have the capability to attack time urgent hard targets, such a capability is lacking in the remaining elements of the nation's strategic force. Continued reliance on a diversity of forces with overlapping capabilities indicates a need for a time urgent hard target capability in our SLBM force. Such a capability can be realized through development and deployment of the TRIDENT II missile with its potential for increased accuracy and greater throw-weight.

Deployment of the TRIDENT II missile, in conjunction with our programmed ICBM force, will enhance the confidence in our deterrence and, should deterrence fail, the availability of survivable strategic forces with flexibility and effectiveness. The TRIDENT II missile will ensure diverse retaliatory capability against all types of targets, will provide a visible commitment to counter Soviet force improvement initiatives and will enhance worldwide stability through the existence of a survivable force. The TRIDENT II missile is currently scheduled to begin deployment in FY 87 into the programmed TRIDENT submarine force.

In addition to providing a survivable time urgent hard target capability as a complement to the capabilities of our ICBM force, deploying such a force in a sea-based system will decrease incentives for large scale Soviet attacks against U.S. soil. While the TRIDENT II missile should not be considered as an alternative to the land based ICBM, it should be aggressively pursued as a necessary complement to M-X. It will provide diversity and redundancy throughout the 20th century.

V. Long Range Effects of M-X

The concept of M-X, i.e., deploying a new model "light" ICBM, is not only allowed within the Vladivostok provisions but the Soviet Union is actively engaged in a similar program. The SALT Agreement now under negotiation based on the Vladivostok understandings would limit M-X launch weight and throw-weight and the number of launchers by including

them in the 2400 strategic delivery system aggregate and the 1320 MIRV system aggregate. These provisions will be complied with. The envisioned SALT II Agreement would not restrict mobile deployment of ICBM launchers within the anticipated aggregate limits.

The effect of M-X on the strategic balance as measured by the usual static indicators will be to move it closer to rough equivalence. The U.S. ICBM throw-weight, for example, could be doubled with 300 M-X to approximately 4.5 million pounds compared with the current Soviet figure of over 7 million pounds and a projected figure of over 11 million pounds.

Since land-mobile ICBM deployment concepts achieve survivability through uncertainty in location, their deployment raises verification questions. In assessing these problems, the strategic significance of the uncertainty must be weighed against the advantages the mobile M-X offers in increasing survivability and thus enhancing stability. On balance, in the face of increasing Soviet ICBM accuracies and numbers of weapons, pursuit of U.S. mobile ICBM concepts is advisable.

In addition, while the deployment of mobile M-X with improved accuracy would substantially improve U.S. hard target kill capability against the Soviet ICBM force, the survivability of the mobile M-X would enhance stability and thus reduce the destabilizing influence of the hard target kill capabilities. The net effect should be to give the Soviets incentive to move towards a more stable posturing for their ICBMs. Also, if the Soviet Union follows (or precedes) the U.S. into a mobile ICBM deployment, there should be a significant opportunity for negotiated reductions in silo-based ICBM launcher numbers.

With the current trends, stability is endangered by the growing Soviet capability, as noted previously. By 1980, the disparity in ICBM numbers and capability may be significant, not only in the usual static measures but also in the estimated post-attack postures. Figure 5 shows this situation in ICBM throw-weight (assuming no M-X) for alternate years to 1986. Points on the figure indicate the available throw-weight for each country. The initial point on each line (labeled A) is the pre-attack situation. Point B shows the throw-weight balance after a Soviet attack. Note that an attack by the Soviets in 1976 would have been disadvantageous to them (measured in residual throw-weight) but that in each succeeding year, assuming no U.S. force modernization, their situation is improved.

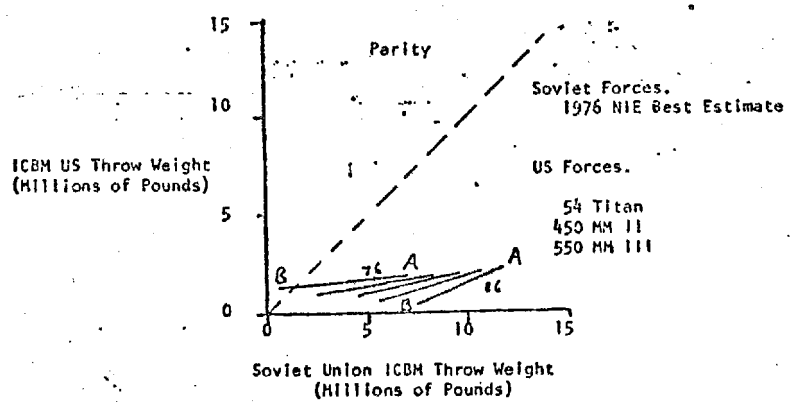


Figure 5. Strategic Balance Projections

With an M-X multiple aimpoint deployment, the situation is changed. The initial throw-weight balance is improved and the better accuracy and yield on the increased number of surviving weapons can be effective in drawing down the Soviet reserve ICBMs. Figure 6 shows the result of a 1986 ICBM exchange in which the Soviet Union is left in a relatively poorer position.

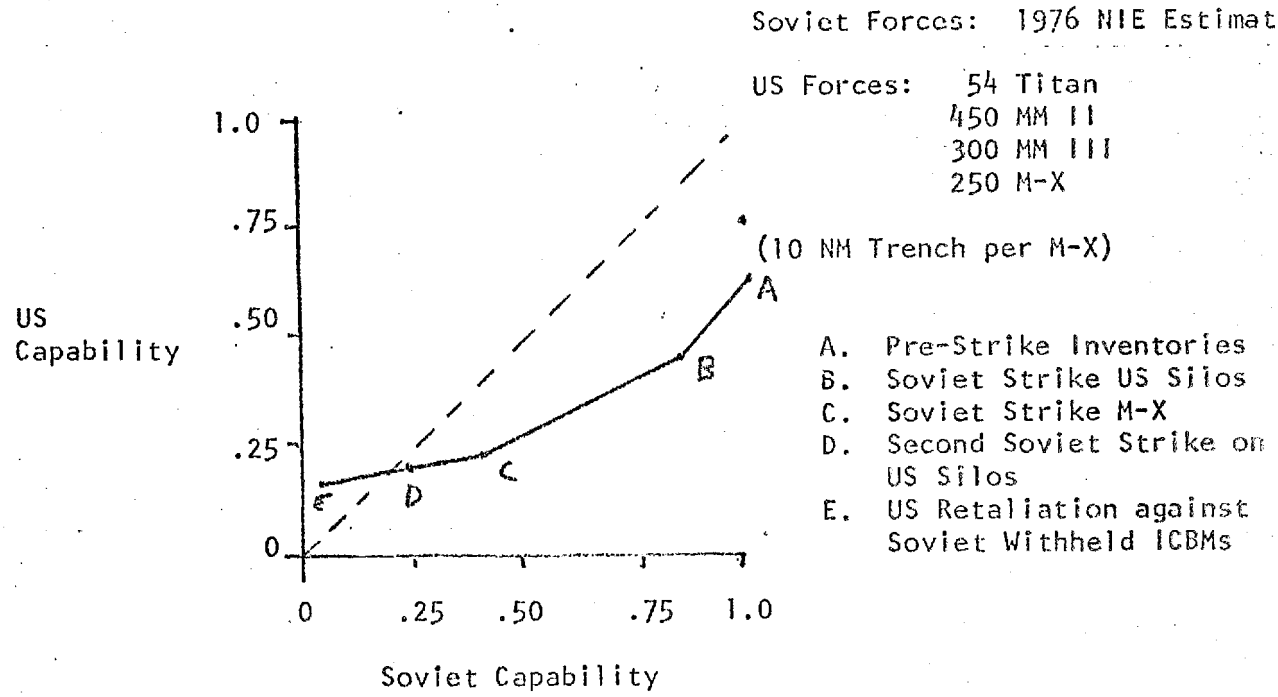


Figure 6. ICBM Weapon Exchange (1986)

It is, of course, not possible to forecast Soviet reactions to a U.S. M-X program with a high degree of certainty. The Soviets recognize the increasing vulnerability of the silo-based force due to increases in U.S. missile accuracy, and will probably continue their efforts to disperse some portion of their force on mobile platforms, particularly at sea. They continue, however, to emphasize the value of their silo-based missiles because of their heavy throw-weight advantage over mobile systems.

Possible Soviet Responses

Today, the Soviet Union is trying to buy high survivability by putting their new ICBMs in very hard silos. If they decide, because the U.S. obtains some limited amount of hard-target capability with M-X, that this is not adequate and that they must also go to land-mobile deployment, the basic situation from the standpoint of the strike-second country (the U.S.) is unchanged from that of today, i.e., it does not and would not have a strong offense damage-limiting capability. The length of the M-X development and deployment schedule (over ten years to full capability) is suffi-

cient to allow the Soviet Union adequate time to develop and deploy a similar system to improve its survivability. Such a move would enhance crisis stability and should decrease arms race pressures since neither country would then have the counter-ICBM capability required for making a preemptive attack.

On the other hand, the disadvantageous exchange ratio enforced by M-X on the Soviet Union might at some time be considered by the Soviet Union not too high a price to pay for a successful first-strike and they could start to procure additional weapons for this purpose. If this were perceived by the U.S., additional shelters or miles of trench could be bought to raise the exchange ratio so high that an unequivocal violation of the envisioned SALT Agreement would be necessary for the Soviets to be able to contemplate an attack.

VI. Conclusions and Recommendations

Maintaining military stability implies not only aggregate equivalence in basic measures of military strength but also the perception that no significant relative advantage can be gained by a first strike against opposing forces.

The Triad concept of strategic nuclear forces provides the diversity and redundancy needed to most effectively retaliate against a USSR initiation of war and to protect against technological surprise.

Modernization of all Triad forces is needed to maintain military stability in the face of increased Soviet military strength and economic growth and dispersal.

Development of the Trident II missile will provide in the late 1980s needed diversity against time-urgent hard targets.

The planned M-X program can add, in a timely manner, the survivability, throw-weight and accuracy capabilities needed to maintain the ICBM element of the Triad.

Recommendations

ICBM modernization should include improved survivability as well as increased throw-weight and accuracy to impose a perceived and real unfavorable exchange ratio on the Soviets. This will provide military stability and continued deterrence.

The M-X program should enter full scale development to permit the earliest deployment possible in order to assure ICBM force viability and continued implementation of national strategic policy.

	UNCLASSIFIED		CONFIDENTIAL		SECRET

EXECUTIVE SECRETARIAT

Routing Slip

TO:			ACTION	INFO	DATE	INITIAL
	1	DCI				
	2	DDCI				
	3	D/DCI/IC				
	4	DDS&T				
	5	DDI		✓		
	6	DDA				
	7	DDO				
	8	D/DCI/NI	✓			
	9	GC				
	10	LC				
	11	IG				
	12	Compt				
	13	D/Pers				
	14	D/S				
	15	DTR				
	16	Asst/DCI				
	17	AO/DCI				
	18	C/IPS				
	19	DCI/SS				
	20	D/EEO				
	21					
	22					
		SUSPENSE COB 18 JAN 77				
		Date				

Remarks:

D/Executive Secretary

Date

3637 (7-76)

TOP SECRET

UNCLASSIFIED when blank—TOP SECRET when attached to Top Secret Document—automatically downgraded or declassified when filled in form is detached from controlled document.

CONTROL AND COVER SHEET FOR TOP SECRET DOCUMENT

DOCUMENT DESCRIPTION		REGISTRY
SOURCE: NSC		
DOC. NO.		DATE DOCUMENT RECEIVED: 18 Jan 77
DOC. DATE: 17 Jan 77		LOGGED BY
COPY NO.: 2		
NUMBER OF PAGES: 1 (21 T)		
NUMBER OF ATTACHMENTS: one		

ATTENTION: This form will be placed on top of and attached to each Top Secret document received by the Central Intelligence Agency or classified Top Secret within the CIA and will remain attached to the document until such time as it is downgraded, destroyed, or transmitted outside of CIA. Access to Top Secret matter is limited to Top Secret Control personnel and those individuals whose official duties relate to the matter. Top Secret Control Officers who receive and/or release the attached Top Secret material will sign this form and indicate period of custody in the left-hand columns provided. Each individual who sees the Top Secret document will sign and indicate the date of handling in the right-hand columns.

REFERRED TO	RECEIVED			RELEASED		SEEN BY		
OFFICE	SIGNATURE	DATE	TIME	DATE	TIME	SIGNATURE	OFFICE/DIV.	DATE
ER		18 Jan 77						
NI								
						17 Jan 77		
						NSC		

NOTICE OF DETACHMENT: When this form is detached from Top Secret material it shall be completed in the appropriate spaces below and transmitted to Central Top Secret Control for record.

DOWNGRADED		DESTROYED		DISPATCHED (OUTSIDE CIA)	
TO		BY (Signature)		TO	
BY (Signature)		WITNESSED BY (Signature)		BY (Signature)	
OFFICE	DATE	OFFICE	DATE	OFFICE	DATE